

IRON AGE

MANUFACTURING MANAGEMENT



BATTLE OF THE AUTO SUPPLIERS:

DETROIT SCANS THE GLOBE FOR
THE BEST PARTS
AMERICAN STEELMAKERS FACE
A DUAL CHALLENGE

IS HISTORY ON THE SIDE OF
PROTECTIONISM...OR FREE TRADE?

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Departments	
EDITORIAL STAFF	11
SIGNED, SEALED AND DELIVERED	11
INDUSTRY BRIEFS	19
PRODUCT & EQUIPMENT REVIEW	78
P&P DATA 10/7	89
BUSINESS STAFF	90
AD INDEX	90
MANAGEMENT SERVICE CARD	91
FERROUS SCRAP 10/7	93
STEEL PRICES	94
CLEARING HOUSE	98

Editorial	7
Am I misinformed?	
Newswatch	13
Honda expands its American production and supplier base.	
Machine Tool Report	22
U.S. competitiveness in FMS is being challenged.	
You and Your Job	24
Japanese and U.S. officials mull over workplace stress.	
Auto Materials I	29
U.S. auto suppliers can help themselves by helping Detroit cut costs.	
Auto Materials II	37
American steel battles imported steel and plastics.	
Trade	48
Has protectionism hurt the U.S. or helped it?	
Cast Iron	59
Things are happening in gray and ductile iron.	
Technically Speaking	75
Prices drop for a new metal matrix composite.	
Materials Report	88
Steelmakers will raise sheet and tinplate prices.	
Order Trends	100
Autos and aircraft account for the latest rise in orders.	
Next Issue: Selecting the Dream Factory.	

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BATTLE OF THE AUTO SUPPLIERS:

Detroit Scans The Globe For The Best Parts

BY BRYAN H. BERRY

Now is a crucial time for the American automotive supplier industry.

Japanese automakers have a cost advantage of \$2,500 in small-car manufacturing over their American competitors. Of that \$2,500, fully \$800 is due to the lower costs of Japanese suppliers, said Kenneth Whipple, Ford's vice president of corporate strategy.

U.S. automakers are committed to cutting the cost of manufacturing cars by 25-30 pct, or the full \$2,500, by 1990. If American suppliers don't help Detroit cut costs hugely, Detroit will buy those parts from overseas.

By 1990 Japanese automakers will be building 1.3 million vehicles in the U.S. Unless American suppliers can ship the cost, quality, and delivery the Japanese automakers demand, expect a flood of Japanese suppliers to follow their countrymen to the U.S.

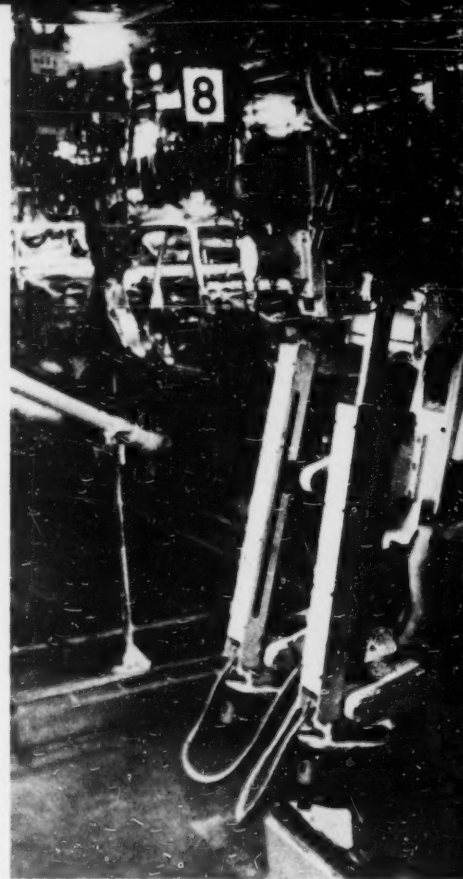
"There is no question but that U.S. suppliers should put extremely high priority on developing business with Japanese-owned, U.S.-based assemblers," stated Michael S. Flynn and Daniel D. Luria in a pub-

lication for the Industrial Technology Institute (Ann Arbor, Mich.) this year. "For many suppliers success here will mean survival; failure, total bankruptcy."

Some American suppliers have scored notable successes in selling to Japanese automakers not only in the U.S. but in Japan as well. Others not only have failed to sell to the Japanese but have lost contracts that they once had with them.

Kelsey-Hayes (Romulus, Mich.), for example, originally had the contract to supply wheels to the Nissan truck plant in Smyrna, Tenn. But Topy Industries of Japan, which supplies Nissan's Japanese plants, convinced Nissan U.S.A. that it could do a better job than Kelsey-Hayes. Topy presently is building a \$26 million plant in Frankfort, Ky., that will supply all Nissan U.S.A.'s truck wheels starting next year.

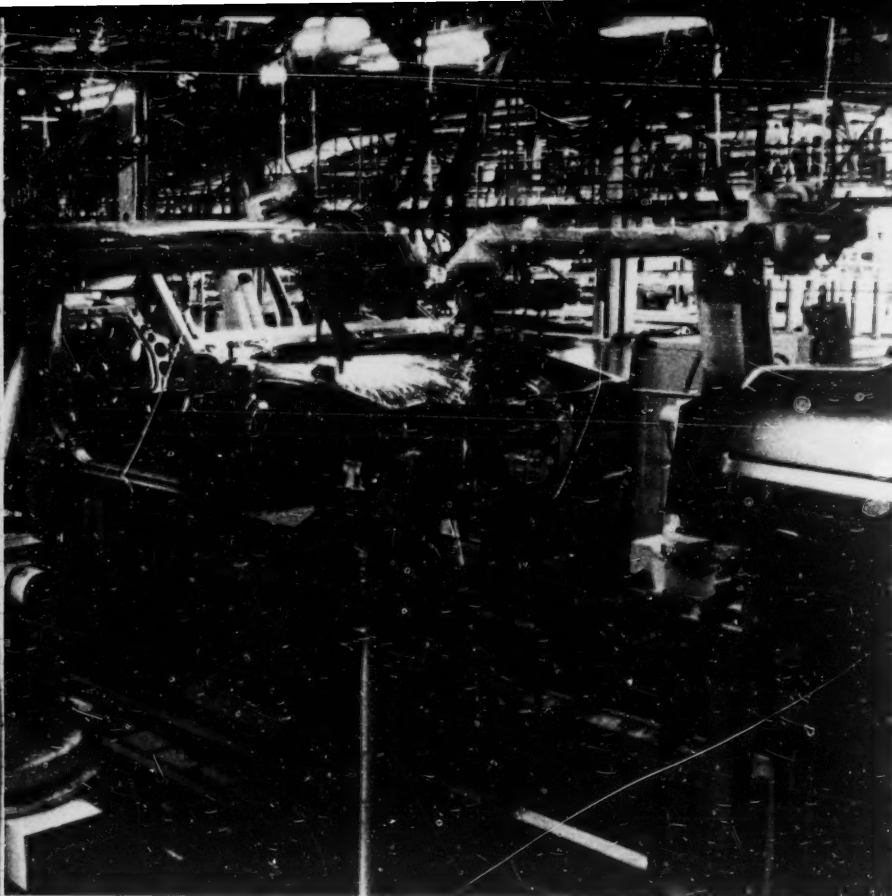
"We are convinced that Topy will be more competitive in quality, cost, and delivery than Kelsey was," explained Robert A. Frinier, a former Ford manager who now serves as Nissan U.S.A.'s vice president of purchasing and information systems. Kelsey-Hayes will have no Nissan business when Topy takes



Chevrolet's Nova subcompact, built by the GM/Toyota joint venture, uses 1,450 parts from Japan and 400 from the U.S.

over, though Mr. Frinier says Nissan is considering Kelsey as a supplier of brake and axle components. Topy, meanwhile, also has won a contract for Honda's Marysville, Ohio, plant and is seeking more U.S. business.

Another American supplier will lose business when a GM division begins a joint venture with a Japanese supplier of seats. No. 3 automaker Chrysler plans to import castings, electronics, and powertrain components from South Korea's Samsung.



"We also want our U.S.-based suppliers to form separate joint ventures with Samsung," explained Chrysler Vice Chairman Gerald Greenwald. "We don't want this to be just a joint venture between two car companies." The two automakers also are discussing cars that Chrysler could import from Samsung.

This year Chrysler created the International Business Development Group, headed by Stephan Sharf, its former manufacturing vice president. "Our aim is to establish worldwide trading partners who will help us remain competitive," explained Mr. Sharf. Mr. Sharf is enlisting the aid of L. Schuler, the West German machine-tool maker, to help Chrysler modernize its three stamping plants so they can produce the equivalent of four plants' output.

The North American content (which includes U.S. and Canadian parts) of Chrysler's cars has slipped from 94 to 90 pct in the past two years. GM and Ford's hover around the 95-pct mark.

So far the U.S. trade deficit in auto parts—\$3.4 billion in 1984—is dwarfed by the \$29.7 billion deficit in vehicles. In 1984 foreign com-

panies shipped \$16.7 billion worth of auto parts to the U.S.—but Americans punched back with \$13.3 billion worth of exports (see chart, p. 29). That's much more than the paltry \$7.5 billion of vehicles exported by U.S. automakers. In 1981, U.S. auto-parts suppliers had a record trade surplus of \$1.3 billion.

Cutting Costs

But the competition is stiffening as the Japanese build U.S. auto plants and as Detroit vows to wipe out that \$2,500 Japanese cost advantage. "Not only are automakers putting extreme pressure on their suppliers to cut costs and prices," said one steel executive, "but they're also telling their suppliers to buy the lowest-priced steel they can find—no matter where it's from." (See following article.)

Automakers are pressing many suppliers, including Kelsey-Hayes, to cut costs by fully 8 pct per year over the next several years, reported John Utley, president of Kelsey-Hayes' automotive group. "Auto suppliers are going to have to have world-class prices to compete worldwide," said Mr. Utley.

Most of the major suppliers, such

as TRW, Rockwell, Allied, and Borg-Warner, have overseas plants. Such American suppliers are shipping parts to automakers in Japan from plants both in Japan and the U.S. Japanese plants of Nissan buy transmissions from Borg-Warner; Toyota, aluminum wheels from Rockwell; and Isuzu, Nissan, and Toyota, turbochargers from Garrett.

But it's not just the multinational giants who have scored orders abroad. Monroe has had success selling shock absorbers in Japan. Donnelly, a \$100 million company, is shipping overseas 20 pct of its wares—mainly mirrors and windows, from plants in the U.S. and Ireland—and plans to double that figure by 1990.

By 1995, 20-25 pct of the parts imported into the U.S. will be made in foreign plants owned by U.S. automakers, predicted the automakers and suppliers who participated in a recent Arthur Andersen study. Another 15 pct of the imported parts will come from foreign plants owned by U.S. suppliers, said the panelists, who also forecasted that the foreign share of the U.S. auto parts market will grow by 5-6 pct per year from 1985 to 1990.

(Cont. on p. 29)

Dense, advanced-technology, proprietary products lend themselves most to overseas shipping. Engines and transmissions are perfect examples: All the Japanese automakers in the U.S. are buying those from Japan. A growing number of U.S.-owned auto plants are receiving powertrains from Mexico, Brazil, and Japan. U.S. automakers also are considering importing such labor-intensive parts as wiring harnesses.

Low-tech, bulky products with low labor content lend themselves

most to production in the same country as the automaker.

"It's the suppliers between those two groups that I'm most concerned about," said Peter Van Hull, a Detroit partner of Arthur Andersen & Co. "A huge number of suppliers make parts that don't have much technological superiority over the offshore competition. Those suppliers in particular really have to knuckle down and learn how to do just-in-time manufacturing."

Most car parts are in this medi-

um-tech range most vulnerable to foreign competition. Instrument panels, steel, seats, wheels, axles, bumpers, and many more such parts are natural targets of offshore competition.

Just-In-Time

To be sure, American suppliers have significant advantages over foreign plants in winning business from Detroit. The American plants are much nearer their customers and can ship parts just in time. Freight

Cars and Car Parts: Imports vs. Exports

U.S. Automotive Imports (in millions of dollars)

1. New passenger cars	\$30,423
2. New trucks and buses	6,541
3. Gasoline engines	2,401
4. Transmissions	992
5. Car tires	833
6. Radio/tape players	824
7. Car, truck, and bus chassis	696
8. Truck and bus tires	688
9. Engine parts such as rods and crankshafts	621
10. Brakes and brake parts	532
11. Furniture and parts	481
12. Used passenger cars	327
13. Wheels	298
14. Bumpers	223
15. Springs and leaves for springs	222
16. Body stampings	221

U.S. Automotive Exports (value in millions of dollars)

1. New passenger cars	\$4,876
2. New trucks	2,219
3. Body stampings	1,416
4. Transmissions	1,074
5. Gasoline engine parts	868
6. Gasoline engines	655
7. Diesel engine parts	547
8. Brakes and brake parts	537
9. Air conditioners	357
10. Ignition wiring sets	342
11. Diesel engines	340
12. Tires and tubes	290

Source for both charts: Motor Vehicle Manufacturers Assn., U.S. Bureau of the Census. These are 1984 figures and include all items with a value of more than \$200 million.

Who Ships Car Parts to the U.S. *

(in millions of dollars)	1983	1984
1. Japan	\$2,113	2,944
2. Mexico	1,208	1,609
3. West Germany	631	701
4. Brazil	424	640
5. Taiwan	248	470
6. Korea	254	456
7. France	324	413
8. United Kingdom	232	313

Source: International Trade Commission, Industrial Technology Institute. 1984 figures are estimates based on Jan.-Oct. data.

to the U.S. costs Japanese plants \$500 more than it does U.S. plants, estimates one automaker.

Also, American automakers and suppliers share the same culture, and Americans generally want to buy from other Americans who can compete with offshore competition. True, American suppliers have higher labor, material, and operating costs than the Japanese. But the Americans' advantages offset their higher per-piece costs, said Mr. Van Hull. "American suppliers simply understand how the U.S. auto industry works better than foreign suppliers can," he said.

But understanding how Detroit works is a mixed blessing these days, since Detroit presently is doing its best to change its ways. U.S. automakers, in short, want to become more like the Japanese.

U.S. automakers now are hankering for the same close relationships with their suppliers that they see working so well in Japan. Detroit wants its suppliers to get involved in developing products three years before production begins. It wants not only just-in-time (JIT) delivery but just-in-time manufacturing as well. It wants suppliers to make parts only shortly before the auto plants install them—so the automakers can give immediate feedback if the suppliers' processing needs changing.

Unfortunately for the U.S., Japanese suppliers are much more adept at such JIT manufacturing than are the Americans. "The American

record in implementing JIT manufacturing is dismal," said Mr. Van Hull. Instead of synchronizing their manufacturing to the automakers', said Mr. Van Hull, "they talk about building warehouses to hold their stocks and then shipping daily."

To be fair, much of the blame for that lies with the American automakers, who only slowly are stabilizing their production schedules enough to make accurate long-range forecasts of how many parts they'll need and when. "Lack of schedule stability causes uncertainty and added costs in supplier plants," said Richard E. Dauch, Chrysler's executive vice president of manufacturing. He expects more stable schedules to account for big cost cuts for Chrysler and its suppliers.

By 1988, said Mr. Dauch, all Chrysler assembly plants will give 25-day fixed forecasts. For now, however, only two Chrysler plants have met that goal: the recently modernized Windsor, Ont., and Sterling Height, Mich., assembly plants. Ford's 30-day schedules are 98-pct fixed; their 65-day forecasts vary by 15 pct.

In marked contrast, Nissan's Tennessee plant fixes its production schedules three months in advance of production and breaks those forecasts down into daily shipment requirements two months in advance.

Japan's U.S. Plants

In the two years that the Japanese have been building vehicles in the

(Cont. on p. 35.)



Nissan began building Sentra cars at its plant in Tennessee this year.

Automakers Predict Steady Rise in Imported Car Parts

Percentage of car parts imported from:	1985	1990	1995
Japan	6%	8	8
Mexico	2	5	7
Europe	5	5	5
Far East	1	3	5
South America	1	2	3

Source: Arthur Andersen & Co.: *Cars and Competition: Manufacturing Strategies*. These figures are the predictions of 130 automaker executives.

U.S., they've proven that they can manage manufacturing better than their American competitors—whether the Japanese plants are run mainly by Japanese, as at the Honda plant in Marysville, Ohio; or half by Americans and half by Japanese, as at New United Motor Manufacturing, Inc. (NUMMI) at Fremont, Calif.; or mainly by Americans, as at Nissan's Smyrna, Tenn., plant.

As the three Japanese automakers have set up shop here, they've naturally tended to rely at first on their Japanese suppliers. Most Japanese automakers own minority or majority interests in their major suppliers—or at least have very close and longstanding relationships. Any supplier that wants to develop that kind of relationship first must undergo an arduous process of testing.

As the Japanese built their U.S. plants, they didn't always have the time to fully try out new American suppliers. Besides, they were building vehicles they'd already built in Japan, where they had reliable suppliers who knew exactly how to make the necessary parts. No wonder then that the Japanese weren't always interested in trying their luck with American companies that hadn't made the parts before.

But now Nissan, Honda, and NUMMI have time to consider new American suppliers. Nissan in Tennessee has increased its North American content from 40 pct to more than 50 pct since production began in 1983. NUMMI and Honda also appear open to buying more

U.S. parts. Both companies are aiming for 50-pct North American content, though that includes labor.

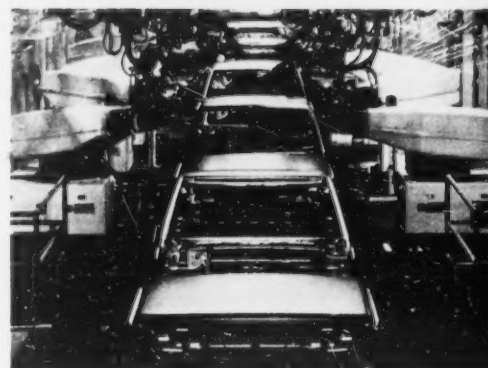
"Our goal is to consistently increase our local content," said Mr. Frinier of Nissan U.S.A. "We've set in motion local-sourcing procedures that should increase our U.S. buys on a steady basis, as in the past.

"Both Nissan U.S.A. and our parent company in Japan think that products should be made where they're sold. We have been given total freedom by our parent company to localize 100 pct of the parts used on our cars and trucks as long as they meet our standards of cost, quality, and delivery." Nissan U.S.A., for example, originally bought air ducts from Japan but now buys them from an Indiana company, Salga.

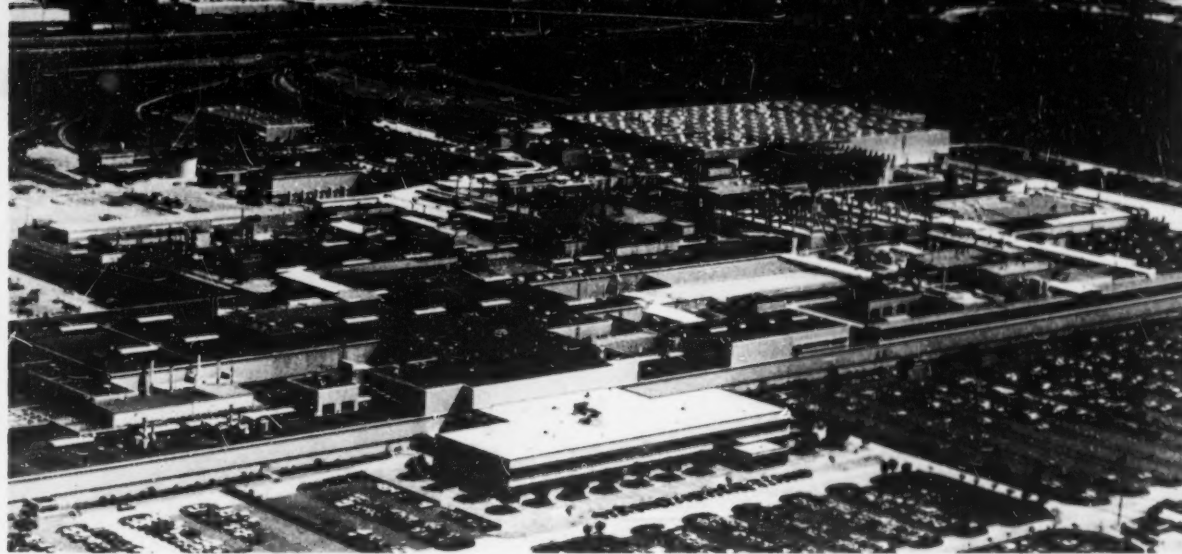
Nissan U.S.A.'s Japanese sourcing is handled by Nissan, Ltd., of Japan, which then sells the parts to Nissan U.S.A. Nissan of Japan invariably buys parts for Tennessee from the same Japanese suppliers that supply Nissan's Japanese plants. Or Nissan's Japanese plants build the parts for Tennessee.

Nissan U.S.A. now is receiving truck engines from Nissan's Kyushu plant; and car engines from its Zama plant. Nissan U.S.A. also buys Japanese transmissions and axles.

So far several Japanese suppliers have built or are building plants near Nissan's Tennessee or Honda's Ohio plant. The location of the two plants is proving a boon for Kentucky, since it's located between



Two Japanese suppliers have built plants in Tennessee to supply Nissan.



Tennessee and Ohio. Frankfort, Ky., the site of Topy's plant, is almost equidistant from Smyrna, Tenn., and Marysville, Ohio. Hitachi also is building a plant in Kentucky to supply engine coils to Nissan and other automakers.

Two Japanese suppliers have built plants in Tennessee to supply Nissan: Kantus, which supplies instrument panels and other injection-molded parts; and Calsonic, air conditioning and exhaust systems. So has an American supplier, Hoover, which supplies seats. All three of these suppliers have 100 pct of Nissan's business for these parts.

Two Japanese suppliers also have built plants in Ohio to supply Honda: Stanley Electric, which supplies lighting equipment; and Bellemar, seats, exhaust pipes, fuel lines, and mufflers.

Joint Ventures

Another supplier building a plant in Tennessee is CKR Industries, a joint venture formed this year between Chardon Rubber Co. (Chardon, Ohio) and Kinugawa Rubber Industries (Chiba-City, Japan). CKR will supply rubber parts to Nissan. Another joint venture, Sheller-Ryobi, will build a plant in Indiana to supply aluminum and zinc die castings. Ryobi, a Japanese company, owns 55 pct of the venture with Sheller-Globe (Toledo).

As automakers and suppliers manufacture more products in foreign countries, the number of joint ventures between automakers and

automakers, automakers and suppliers, and suppliers and suppliers will skyrocket.

"The auto industry is turning into a great big global network," said Mr. Van Hull of Arthur Andersen. "Suppliers need to decide how they're going to fit into the network. If they're not part of it ten years from now, they're dead."

"We're increasing our spending on R&D, and we're looking for ways to hook up with suppliers around the world," said Kelsey-Hayes' Mr. Utley. Most of the large U.S. suppliers' foreign plants are joint ventures or licensees.

"We need many joint ventures with our suppliers," said Donald Kopka, Ford's vice president of design. "There are tremendous opportunities for both us and our suppliers if we get together. We're moving in that direction as fast as we can."

Equally interested are offshore suppliers. The two nations perhaps hungriest for joint ventures with U.S. suppliers today are Korea and Taiwan. Both are eager to plunge further into the world market.

"Korea cannot effectively compete with the Japanese without technical cooperations with the U.S.," said Hee Mock Noh, a senior research fellow at the Korea Institute of Economics and Technology. "Korea can offer the U.S. a base to help develop the Asian market. And Korea wants to export more goods to the U.S., Asia, and South America."

At least one American supplier, Champion Spark Plug Co., is sup-

NUMMI, the GM-Toyota joint venture, buys most of its parts from Japanese suppliers.

porting legislation to reward Japanese automakers for buying more U.S. parts.

Champion wants to liberalize Item 807 of the U.S. tariff schedule, which allows duty-free re-entry into the U.S. of U.S.-made products. Japanese automakers buying more U.S. parts would pay lower duties on cars exported to the U.S.

In a recent press conference, George M. Galster, Champion's vice president of public affairs, called upon the Japanese automakers to buy more U.S. parts. "The primary problem lies in the traditional integration of Japanese car companies with their family of Japanese suppliers," said Mr. Galster.

But others, such as Ford Chairman Donald E. Petersen, take a different tack. "The Asians are learning how to work with us, but we haven't learned how to work with them," said Mr. Petersen. "If we want a crack at the Asian components market, we have to manufacture in Asia." Asian automakers are doing a better job of setting up joint ventures in the U.S. than vice versa, said Mr. Petersen.

Paul McCracken, the University of Michigan business professor, phrased it differently: "When you're buying from a foreigner, it's okay to speak English. But when you're selling, you better speak his language." □

HAS PROTECTIONISM HURT THE U.S. OR HELPED IT?

Protectionism has been the prevailing trade policy for much of the nation's past—free trade arguments notwithstanding—the policy during many of its periods of sustained growth.

Editor's note: In this article, the first of a two-part series, Iron Age looks at the history of U.S. trade policies and their impact on the national economy. Is the current free trade vs. protectionism debate raging throughout the land a new phenomenon? No, says Iron Age Steel Editor George J. McManus. Protectionism was the normal, prevailing doctrine in the U.S. during much of the 19th century and the first part of this century, a period in which the nation enjoyed "sustained, spectacular growth in ... a period of sustained protectionism."

BY GEORGE J. MCMANUS

When the Smoot-Hawley Tariff Act was being debated in 1930, a group of 1,028 economists voiced strenuous opposition to the proposed tariff increases.

Despite this stand, Congress went ahead and put through steep in-

creases. By 1931, U.S. tariffs came to a whopping 53 pct of dutiable imports. Other nations took similar protective measures and U.S. exports fell from \$5.2 billion in 1929 to \$2.4 billion in 1931. U.S. imports fell from \$4.7 billion in 1929 to \$2.7 billion in 1931.

Since that time, economists and academic thinkers have cited the 1930 sequence as an illustration of the evils of protectionism. Smoot-Hawley has been damned as the cause of the Great Depression. Free trade has been established even more firmly than before as the doctrine of anyone with intellectual pretensions.

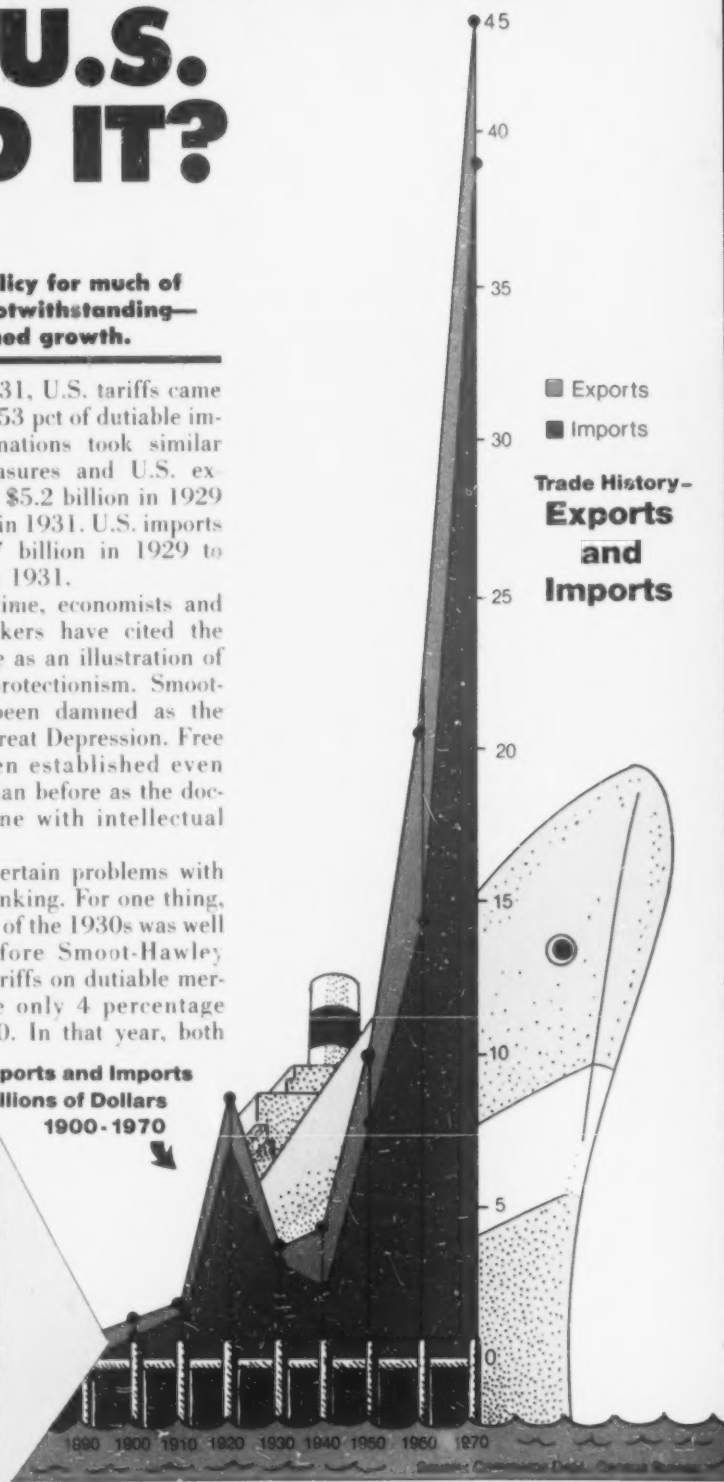
There are certain problems with this line of thinking. For one thing, the depression of the 1930s was well underway before Smoot-Hawley took effect. Tariffs on dutiable merchandise rose only 4 percentage points in 1930. In that year, both

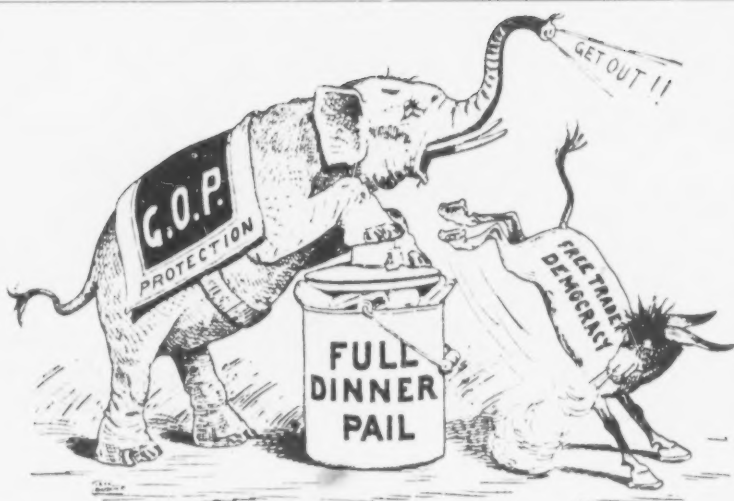


Exports-Imports: 1800-1890
Millions of Dollars

	Exports	Imports
1800	71	91
1810	67	85
1820	70	74
1830	72	63
1840	124	98
1850	144	174
1860	334	354
1870	393	436
1880	826	668
1890	858	789

Exports and Imports
Billions of Dollars
1900-1970





Source: Library of Congress

In the past, cartoonists could draw on trade to distinguish Republicans from Democrats. In a 1904 cartoon, party mascots depict the opposing views. Nine years later, President Wilson and Congressman Oscar Underwood are caricatured as creators of a measure that cut tariffs.



Source: Library of Congress

imports and exports fell by more than \$1 billion. This would suggest the depression preceded the tariff increase and probably had more to do with the trade decline than the higher duties.

Apart from timing, it's hard to see how a trade reduction could have caused a massive depression when there wasn't that much trade to start with. U.S. exports came to 5 pct of Gross National Product 1929. Imports were 4.2 pct. Net exports were less than 1 pct. If all U.S. trade had been wiped out, it couldn't have produced the jobless rate of more than 20 pct in the 1930s.

Looking at it another way, U.S. exports declined by \$3 billion from 1929 to 1933. It's unlikely that this subtraction could cause the drop of more than \$47 billion that took place in the nation's output over the same period.

The simple fact is that the United States was essentially a self-sufficient, isolated nation in 1930. The same condition prevailed in the previous 130-odd years of the nation's existence. Except for a few brief periods, imports usually ranged between 3 and 5 pct of national product. For five years during World War II, the country survived with almost no imports—less than 2 pct.

The country's self-sufficiency was partly a matter of abundant resources, enterprising people and a lot of other advantages. It is also true, however, that the U.S. followed a highly protectionist trade policy for nearly a century and a half. In this connection, it's worth noting that Smoot-Hawley didn't represent a swing from free trade to protection. It was a change from protection to more protection. In 1929, the year before the Act was passed, tariffs on dutiable imports came to more than 40 pct.

It's worth noting that the prosperity of the 1920s was preceded by a big increase in tariffs. U.S. duties went from 16 pct in 1920 to 38 pct in 1922. This boost was followed by a decade of roaring good times.

There was the opposite reaction in 1894 when the Wilson-Gorman Act lowered tariffs from 49 pct to 40

pct. In that same year, there was the worst depression the nation had experienced until then. This may have been a coincidence, but the average person at that time didn't think so. The people voted high-tariff Republicans back into power in 1896. Acting on this mandate, the Republicans restored the 49 pct tariff rate.

It's possible that in both 1920 and 1894, the close linking of tariff actions with economic swings was coincidental. Arguments have been advanced along those lines and we, ourselves, argued the 1930 timing was accidental.

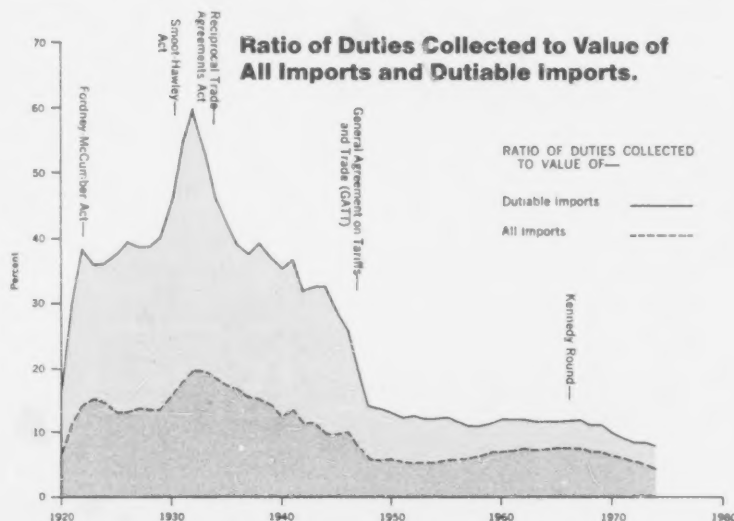
What can't be argued is that protectionism is necessarily repressive. Prosperity has followed tariff hikes. The increases may not have caused the prosperity, but they didn't automatically cause depressions.

The short-term swings can be interpreted in various ways, but there can be no quibbling over two overwhelming facts. First, the United States enjoyed sustained, spectacular growth in the 19th century and the first part of the 20th century. Secondly, this was a period of sustained protectionism.

As was the case in the 1920's, the fluctuations of trade policy in the industrial revolution were between a lot of protection and a little less protection. The first U.S. tariff act—in 1789—was fairly moderate, calling for about 8½ pct duties. Once the country got its bearings, however, tariffs were jacked up. There was a 42 pct increase in 1816. Between 1824 and 1833, four major tariff acts were approved by Congress.

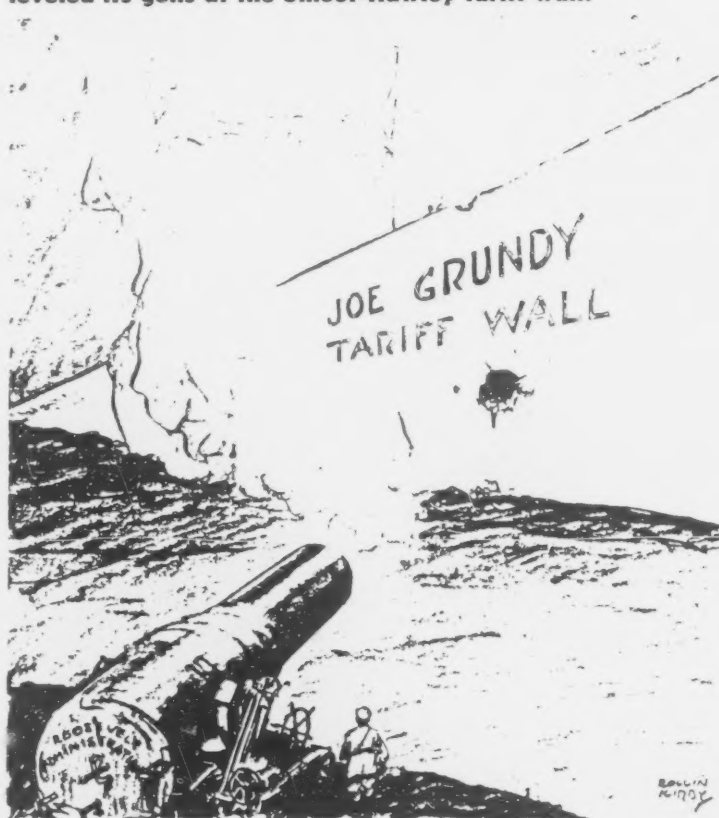
From 1821 through World War II, U.S. tariffs on dutiable goods remained above 20 pct in all but four years. In only 20 years during that period were tariffs less than 30 pct. And again, this was the period that saw an industrial colossus created. A century or so of protectionism had produced a nation that, in terms of industrial productivity, could win World War II "without really trying," says historian B. Bruce Briggs.

The point of all this is that protectionism is not an ancient aberration, surfacing again after being discard-



Source: Library of Congress

It's been a losing battle for protectionism since the Smoot-Hawley Act of 1930. U.S. tariffs on dutiable imports have declined at a steady pace. The Roosevelt Administration, as the 1933 cartoon below indicates, leveled its guns at the Smoot-Hawley tariff wall.



Source: Library of Congress

U.S. Trade—Imports Have Surpassed Exports

In Millions of Dollars

	Exports	Pct of GNP	Imports	Pct of GNP	Tariff Rates*
1970	42,469	4	39,866	4	10
1971	43,319	4	45,579	4	9
1972	49,381	4	55,797	5	9
1973	71,410	5	70,499	5	8
1974	98,306	7	103,811	7	8
1975	107,088	7	98,185	6	6
1976	114,745	6	124,228	7	6
1977	120,816	6	151,907	7	5
1978	142,054	6	176,020	8	6
1979	184,473	8	212,028	9	7
1980	224,237	8	249,781	9	6
1981	237,019	8	265,086	9	5
1982	211,217	6	247,606	8	5
1983	200,500	6	258,000	7	5

Source: Department of Commerce, Bureau of Economic Analysis.

* On dutiable products

ed when mankind moved out of the dark ages. In terms of economic theory, the mercantile era ended with Adam Smith and David Ricardo around the end of the 18th century. As a practical matter, U.S. tariffs on imports were over 36 pct as late as 1941. Until recently, protectionism was the normal, prevailing doctrine in the U.S.

This was not a unique situation. "Trade in most countries at most times is highly regulated," wrote Mr. Bruce-Briggs in the *The Twilight of Free Trade*. "...the governors within a country are more responsive to pressures from within the country than without."

It's necessary to make these points because free trade has come to be regarded as the normal, healthy, accepted philosophy. Protectionism has become a shameful throwback to the distant past. Even those who want to be protected must avoid saying so. Steel executives must say they're for free trade, but government should do something about unfair trade of foreigners.

This inhibition contrasts sharply with the attitudes and standards of earlier times. In 1791, when the na-

tion had little or no industry, Alexander Hamilton argued for protective tariffs. "A country should try to possess within itself all the essentials of national supply," he said.

Daniel Webster waffled a bit on the trade issue, but he wound up strongly protectionist. He offered the identical argument that is made today by domestic steel producers when people say protective measures will deprive consumers of low-priced imports. If the imports are allowed to destroy a domestic industry and eliminate domestic competition, he contended, consumers will pay high prices for the foreign products.

Abraham Lincoln believed people could buy everything they needed at home. If the rich wanted frills from Europe, he said, they should pay the extra amount represented by tariffs.

None of which means protectionism was universally endorsed in the 19th century. The Democrats were generally for free trade. The agricultural Southern states were strongly opposed to high tariffs. There were periods when free trade thinking prevailed. In 1833, with the South in need of soothing, Henry Clay engineered a compromise that called

for reductions in protectionist tariffs over 10 years. It's worth noting that duties as high as 20 pct were not classed as protectionist.

There were tariff cuts in 1894 and even the Republicans under President William H. Taft supported tariff cuts in 1909. In 1913 under President Woodrow Wilson tariffs were reduced significantly.

There was occasional movement toward free trade in those periods, but this never reduced duties below the protectionist level. At all times, the cause of protection had popular support and political muscle. It was always a respectable position.

Going back still further, protection in the form of the mercantile system was dominant in the 17th and 18th centuries. The mercantile concept has remained vague, but it called for nations to accumulate as much wealth as possible by exporting a lot and importing very little.

This system fell into disrepute long ago. "For almost two centuries," said Mr. Bruce-Briggs, "The orthodox position in economics and history had been that the mercantilist policy was counter productive."

The policy was entirely rational,

he said, and nations have never abandoned the idea of maximizing exports and minimizing imports. He cited the high degree of protectionism that accompanied Japan's emergence as an industrial power.

The distinctive aspect of mercantilism, possibly, was the extent of government intervention in trade. Colonialism was the ideal vehicle for this intervention. The kinds of things that were possible in the colonial era were brought out by Britain's regulation of American trade.

A 1699 British law forbade U.S. exports of wool and wool cloth. The emigration of skilled artisans to the colonies was forbidden in 1718. American exports to any destination had to go through Britain and pay duties there. Overall, the colonies probably benefitted from trade ties with Britain, but there was no doubt that this trade was managed by the British government.

In 1776, a rationale for free trade, foreign as well as domestic, was provided by Adam Smith in *The Wealth of Nations*.

"It is the maxim of every prudent master of a family never to attempt to make at home what it will cost him more to make than buy," he wrote. "What is prudence in the conduct every private family can scarce be folly in that of a great kingdom."

Ricardo's Theory

This dictum left a big unanswered question: What if everything a country makes is more costly than the products of other countries? This difficulty was solved in 1817 by David Ricardo's theory of comparative advantage. Many have believed this meant that some countries will always have some advantages over other countries.

That isn't the idea. Ricardo's ingenious and attractive theory said that a country could trade as long as the cost comparison between two domestic products differed from the comparison in another country. Mexico, for example, could sell transistor radios to Japan as long as the two countries had different ratios between radios and soybeans.

Anyway, a theoretical base was provided for free trade and this doctrine gained an academic constituency that has remained intact since then. "To be a trained economist," said Mr. Bruce-Briggs, "is to be taught that free trade is the only respectable and reasonable theory of international exchange of commodities. To advocate anything other than a continuation of free trade policy is to be stupid, contemptible and dangerous."

How much immediate impact Ricardo had in the real world is uncertain. Great Britain did begin moving toward free trade in 1815 with a series of acts that included repeal of the Corn Laws in 1846 and culminated in 1860 with removal of the last import duty—on silk.

While these actions closely followed Ricardo's theory, they also came at a time when Britain had become an industrial and financial powerhouse. The country's industrial development gave it an absolute advantage over foreign competitors. Britain had become the financial clearinghouse for all trade. In short, it was in the nation's interest to promote as much trade as possible.

After World War II, the U.S. advocacy of free trade certainly came with the nation in a commanding economic position. The industries of Britain, Japan, and Germany had been bombed and battered. It is not true that the Marshall plan and the free trade push were designed just to sell tractors abroad. The U.S. adopted policies that facilitated a flow of equipment abroad mostly because it was the right thing to do.

The U.S. was, however, in a position to benefit from the postwar trade and it certainly seemed unthinkable that the nation could ever be hurt by foreign trade.

Accordingly, the U.S. took the lead in eliminating protective barriers. The first steps in this direction actually were taken in the 1930s under President Franklin D. Roosevelt. The Reciprocal Trade Agreements Act of 1934 authorized the President to negotiate bilateral trade agreements. Until then, all tariffs had been set by Congress and had

been applied across the board in a unilateral manner.

By the middle of World War II, a total of 30 bilateral agreements with 24 nations had been signed. The most important of these was the reciprocal treaty signed with Great Britain in 1938.

In 1945, the Trade Agreements Extension Act authorized President Harry Truman to reduce tariffs 50 pct and to enter into multi-national negotiations. In 1947, representatives from 23 nations met in Geneva and spent seven months drawing up the General Agreement on Tariffs and Trade (GATT). This consisted on 123 trade agreements covering some 50,000 commodities.

The GATT talks produced the most decisive tariff cuts in U.S. history. From over 31 pct in 1944, U.S. rates on dutiable products fell to under 14 pct in 1948.

In 1964, the Kennedy Round of GATT talks began negotiations which were to last three years. These reduced tariffs on non-farm products 35 pct and those on farm products 20 pct. When the new agreements had been implemented, the average rates were:

- U.S. - 9.9 pct;
- UK - 10.8 pct;
- EEC - 8.6 pct, and
- Japan - 10.7 pct.

In 1971, the U.S. had its first negative trade balance since 1895. From \$2.2 billion in 1971, the trade deficit grew to more than \$100 billion in 1984. It will probably reach \$130 billion in 1985.

In response to this worsening, the U.S. remedy has been more of the same. Tariff rates were cut from 10 pct in 1970 to 5 pct in 1983. This performance seems to refute the charge that nations embrace free trade only when it is in their interest. The U.S. has continued to press for larger doses of free trade in the face of continued losses. □

In its December 6 issue, Iron Age will talk with leading manufacturing and government experts responsible for grappling with the nation's current trade crisis to determine how they will deal with it.

PRICE & PRODUCTION DATA

(Effective October 7, 1985)

Steel production by districts, thousands of tons
(000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	170	163	182	135
Pittsburgh	155	146	149	204
Youngstown	99	99	91	95
Lake Erie	146	140	113	145
Detroit	141	138	147	130
Chicago	493	475	491	344
Cincinnati	84	91	90	82
St. Louis	80	77	72	76
Southern	181	180	182	151
Western	76	68	74	65
U.S. Production	1,625	1,577	1,591	1,427

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 59.4*
Pellets (per iron unit natural)	gross-ton 72.5-86.9**
Mesabi, regular-unscreened	gross-ton \$32.53
Mesabi, non-bessemer	gross-ton \$30.03-31.53***

*59.4¢—Pickands Mather, 8/1/85, delivered hold of vessel, upper lake ports.

72.5¢—U.S. Steel as of 8/16/85. **86.9¢—Oglebay Norton 3/25/82; Hanna Mining and Cleveland-Cliffs, 2/26/82. *Effective 8/1/83.

NONFERROUS PRICES

(Effective October 7, 1985) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	44.76	44.67	10/ 7/85
Copper (C)	66.00	65.50- 66.00	10/ 2/85
Lead	19.00- 20.00	18.50- 20.00	10/ 4/85
Magnesium Ingot	148.00	143.00	5/25/84
Nickel (LME)	200.33	201.05	10/ 7/85
Titanium Sponge	555.00- 585.00	555.00	4/29/82
Zinc	38.00	41.00	9/24/85

ALUMINUM: Avg. for last week & previous week. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	\$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	\$236.00
Beryllium-copper, per lb. cont. Be	\$144.00
Beryllium 97% powder 200	\$197.00
Cadmium, ton lots	\$1.00-1.25
Calcium, ton lots, crown	\$3.76
Chromium, 99.8%	\$3.75
Cobalt, 99%, cathode	\$12.50
Gold per troy oz.	\$326.00
Indium, dollars per troy oz.	\$2.50
Iridium, dollars per troy oz.	\$440.00
Magnesium sticks, 10,000 lbs.	\$2.02
Mercury, per 76-lb. f.o.b. N.Y.	\$320.00-330.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	\$6.85

STEEL PRODUCTION, COMPOSITE PRICES

(Effective October 7, 1985)

U.S. Steel Production

	Last Week	Two Weeks Ago	To Date 1985	To Date 1984
Net tons, in thousands	1,625	1,577	67,203	72,615
Capability Utilization Rate	63.9	61.9	65.9	70.4

Composite Prices

	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base*	27.582	27.582	27.582	27.582
(¢/lb.—eff. 7/1/84)				
Pig Iron** (Net ton = 2000 lbs.)	\$213.00	\$213.00	\$213.00	\$213.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	\$ 71.50	\$ 71.17	\$ 72.83	\$ 83.50
No. 2 bundles	\$ 52.50	\$ 52.50	\$ 53.17	\$ 51.50

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	\$ 73.50	\$ 73.50	\$ 75.50	\$ 88.50
No. 1 steel, Philadelphia	68.50	68.50	70.50	80.50
No. 1 steel, Chicago	72.50	71.50	72.50	81.50
No. 1 bundles, Detroit	66.50	67.50	69.50	75.50
Low Phos., Youngstown	69.50	70.50	70.50	78.50
No. 1 mach'y cast., Pgh	71.50	71.50	71.50	71.50
No. 1 mach'y cast., Phila	91.50	91.50	92.50	98.50
No. 1 mach'y cast., Chi	99.50	99.50	99.50	113.50

*Finished Steel Composite: Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite: Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite: Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nickel electro (PDCR)	\$3.29
Palladium, per troy oz.	\$103.00
Platinum, per troy oz.	\$318.00
Rhodium, per troy oz.	\$1,075.00
Silver ingots, per troy oz.	\$6.29
Vanadium	\$6.00
Zirconium sponge	\$12.00-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Sept. 30—560.82	Oct. 3—556.47
Oct. 1—557.33	Oct. 4—556.47
Oct. 2—559.21	

Scrap Prices Brass Mill Scrap

(Cents per lb., over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	59	48 1/2
Yellow brass	52 1/8	42 3/4
Red brass	55 3/8	44 3/4
Comm. bronze	56 1/2	45 1/8
Mang. bronze	44 3/4	43 3/4
Free cutting rod ends	47	46

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	56
No. 2 copper wire	48
Light copper	39

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	52
No. 2 copper wire	44
Light copper	35
No. 1 composition	46
No. 1 comp. turnings	44
Hvy. yellow brass solids	33
Hvy. yellow brass turnings	30
Radiators	35

Aluminum		
New mixed clips	33	— 34
Old sheet	30	— 31
Old cast	30	— 31
Clean dry borings	31	— 32

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	24	— 26
Mixed L.C. clips	21	— 22
Old sheets and cast	20	— 21
Borings and turnings	16	— 18
Duraluminum clippings	24	— 25

Copper and Brass

No. 1 copper wire	45	— 46
No. 2 copper wire	37	— 39
Light copper	32	— 33
Radiators	30	— 31
No. 1 composition	39	— 40
No. 1 composition turnings	36	— 37
Cocks and faucets	28	— 29
Clean heavy yellow brass	27	— 28
Brass Pipe	28	— 29
New soft brass clippings	39	— 40

Lead

Heavy soft lead	6	— 8
Whole batteries	1	— 3
Type metal	16	— 17
Electrotype	13	— 15

Nickel

Nickel solids	115	— 125
Nickel rod ends	115	— 125
Nickel sheets, clips	115	— 125
Nickel turnings	25	— 35

Zinc

New zinc clippings	17	— 18
Old diecast zinc	13	— 14

NOTICE: Cleveland and Youngstown scrap price reporting change

Iron Age will change its method of reporting scrap prices in Cleveland and Youngstown from consumer delivered prices to broker buying prices beginning with the effective date of Nov. 11. Those prices will appear in the Dec. 6 issue.

Much of the scrap in Cleveland and Youngstown is shipped to consumers in other cities. Broker buying prices more accurately reflect the variety of markets for Cleveland and Youngstown scrap. Also on Nov. 11 *Iron Age* will reduce the range in prices for Cleveland and Youngstown from \$3 to \$1. In addition, *Iron Age* will no longer list the Cleveland prices of mixed borings and turnings, drop forge flashings,

steel axle turnings, railroad cast, cupola cast, and stove plate, since the volume of business in these grades is minimal. However, *Iron Age* will begin listing Cleveland prices for (1) mixed cast and (2) plate and structural steel, five feet and under.

In August and September, *Iron Age* raised the prices of many grades of Cleveland scrap to align them more closely with consumer delivered prices. For some of these grades, the actual market prices did not rise as much as the *Iron Age* prices did. *Iron Age* welcomes written comments regarding these changes. Write to Michael Marley, Managing Editor, *Iron Age*, Chilton Co., Chilton Way, Radnor, Pa. 19089.

EFFECTIVE OCTOBER 7, 1985

(Effective October 7, 1985) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	\$ 73.00 to	\$ 74.00
No. 2 hvy. melting	63.00 to	64.00
No. 1 dealer bundles	88.00 to	89.00
No. 1 factory bundles (auto)	88.00 to	89.00
No. 2 bundles	54.00 to	55.00
No. 1 busheling	86.00 to	87.00
Machine shop turnings	7.00 to	8.00
Shoveling turnings	40.00 to	41.00
Cast iron borings	38.00 to	39.00
Low phos. punchings plate	90.00 to	91.00
Heavy turnings	63.00 to	64.00
No. 1 RR hvy. melting	80.00 to	81.00
Rails, 2 ft. and under	96.00 to	97.00
Scrap rails, random lgh	80.00 to	81.00
RR specialties	92.00 to	93.00
No. 1 machinery cast	71.00 to	72.00
Cupola cast	64.00 to	65.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	555.00 to	565.00
18-8 turnings	455.00 to	465.00

Chicago

No. 1 hvy. melting	\$ 72.00 to	\$ 73.00
No. 2 hvy. melting	65.00 to	66.00
No. 1 dealer bundles	86.00 to	87.00
No. 1 factory bundles (auto)	85.00 to	86.00
No. 2 dealer bundles	59.00 to	60.00
No. 1 busheling	71.00 to	72.00
Shredder scrap	83.00 to	84.00
Machine shop turnings	41.00 to	42.00
Mixed borings and turnings	43.00 to	44.00
Shoveling turnings	45.00 to	46.00
Cast iron borings	45.00 to	46.00
Low phos. large crop	95.00 to	96.00
Low phos. punchings plate		
1/4 in. and heavier	111.00 to	112.00
Low phos. 2-ft. and under	106.00 to	107.00
No. 1 RR hvy. melting	76.00 to	77.00
Scrap rails random lgh	82.00 to	83.00
Roller rails	107.00 to	108.00
Rails, 2 ft. and under	105.00 to	106.00
RR couplers and knuckles	92.00 to	93.00
RR car axles	111.00 to	112.00
No. 1 machinery cast	99.00 to	100.00
Cupola cast	87.00 to	88.00
Stove plate	89.00 to	90.00
Steel car wheels	87.00 to	90.00
Stainless		
18-8 bundles and solids	540.00 to	550.00
18-8 turnings	455.00 to	465.00
430 bundles and solids	150.00 to	155.00
430 turnings	120.00 to	125.00

Philadelphia

No. 1 hvy. melting	\$ 67.00 to	\$ 70.00
No. 2 hvy. melting	58.00 to	61.00
No. 1 dealer bundles	80.00 to	83.00
No. 2 dealer bundles	42.00 to	45.00
No. 1 busheling	80.00 to	83.00
Shredder scrap	82.00 to	85.00
Machine shop turnings	24.00 to	27.00
Mixed borings and turnings	24.00 to	27.00
Shoveling turnings	39.00 to	42.00
Low phos. 5 ft. and under	76.00 to	79.00
Low phos. 2 ft. punchings	97.00 to	100.00
Electric furnace bundles	87.00 to	90.00
RR specialties	76.00 to	79.00
Rails, 2 ft. and under	100.00 to	103.00
Cupola cast	76.00 to	79.00
Heavy breakable cast	53.00 to	56.00
No. 1 machinery cast	90.00 to	93.00

Detroit

Brokers buying prices per gross ton on cars:		
No. 1 hvy. melting	\$ 52.00 to	\$ 53.00
No. 2 hvy. melting	51.00 to	52.00
No. 1 dealer bundles	66.00 to	67.00
No. 2 bundles	29.00 to	30.00
No. 1 busheling	65.00 to	66.00
Drop large flashings	41.00 to	42.00
Machine shop turnings	40.00 to	41.00
Mixed borings and turnings	9.00 to	20.00
Shoveling turnings	40.00 to	41.00
Cast iron borings	23.00 to	24.00
Heavy breakable cast	34.00 to	35.00
Mixed cupola cast	49.00 to	50.00
Automobile cast	73.00 to	74.00
Stainless		
18-8 bundles and solids	505.00 to	515.00
18-8 turnings	380.00 to	390.00
430 bundles and solids	115.00 to	125.00

Youngstown

No. 1 hvy. melting	\$ 67.00 to	\$ 70.00
No. 2 hvy. melting	56.00 to	59.00
No. 1 dealer bundles	73.00 to	76.00
No. 2 dealer bundles	31.00 to	34.00
Machine shop turnings	24.00 to	27.00
Shoveling turnings	24.00 to	27.00
Low phos. plate	68.00 to	71.00
Electric furnace bundles	72.00 to	75.00
Galvanized bundles	64.00 to	67.00

Cleveland

No. 1 hvy. melting	\$ 55.00 to	\$ 58.00
No. 2 hvy. melting	46.00 to	49.00
No. 1 dealer bundles	77.00 to	80.00
No. 1 factory bundles	68.00 to	71.00
No. 2 bundles	29.00 to	32.00
No. 1 busheling	75.00 to	78.00
Machine shop turnings	16.00 to	19.00
Mixed borings and turnings	7.00 to	10.00
Shoveling turnings	24.00 to	27.00
Cast iron borings	17.00 to	20.00
Cut structural & plates,		
2 ft. and under	100.00 to	103.00
Low phos. punchings plate	100.00 to	103.00
Drop large flashings	53.00 to	56.00
Foundry steel, 2 ft. & under	69.00 to	72.00
No. 1 RR hvy. melting	63.00 to	66.00
Rails, 2 ft. and under	90.00 to	93.00
Rails, 18 in. and under	94.00 to	97.00
Steel axle turnings	57.00 to	60.00
Railroad cast	89.00 to	92.00
No. 1 machinery cast	88.00 to	91.00
Cupola cast	55.00 to	58.00
Stove plate	54.00 to	57.00
Stainless		
18-8 bundles	495.00 to	505.00
18-8 turnings	375.00 to	385.00
430 bundles	90.00 to	100.00

Buffalo

Brokers buying prices per gross ton on cars:		
No. 1 hvy. melting	\$ 57.00 to	\$ 54.00
No. 2 hvy. melting	43.00 to	44.00
No. 1 busheling	57.00 to	68.00
No. 1 dealer bundles	66.00 to	67.00
No. 2 bundles	30.00 to	31.00
Machine shop turnings	16.00 to	17.00
Mixed boring and turnings	16.00 to	17.00
Shoveling turnings	22.00 to	23.00
Cast iron borings	24.00 to	25.00
Low phos. plate	75.00 to	76.00
Structural and plate,		
2 ft. and under	79.00 to	80.00
Rails, 2 ft. and under	79.00 to	80.00
Scrap rails, random lgh	64.00 to	65.00
No. 1 machinery cast	77.00 to	78.00
No. 1 cupola cast	59.00 to	60.00

St. Louis

No. 1 hvy. melting	\$ 45.00 to	\$ 46.00
No. 2 hvy. melting	34.00 to	35.00
Foundry steel, 2 ft.	39.00 to	40.00
No. 1 dealer bundles	45.00 to	46.00
No. 2 bundles	30.00 to	31.00
Machine shop turnings	15.00 to	16.00
Shoveling turnings	21.00 to	22.00
Cast iron borings	30.00 to	31.00
No. 1 RR hvy. melting	53.00 to	54.00
Rails, random length	59.00 to	60.00
Rails, 18 in. and under	72.00 to	73.00
RR specialties	70.00 to	71.00
Cupola cast	71.00 to	72.00
Heavy breakable cast	49.00 to	50.00
Stove plate	89.00 to	90.00
Steel car wheels	81.00 to	82.00
Rolling rails	69.00 to	70.00
Unstripped motor blocks	64.00 to	65.00

Birmingham

No. 1 hvy. melting	\$ 73.00 to	\$ 74.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	73.00 to	74.00
No. 2 bundles	48.00 to	49.00
No. 1 busheling	73.00 to	74.00
Shredder scrap	88.00 to	89.00
Machine shop turnings	25.00 to	26.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	38.00 to	39.00
Electric furnace bundles	66.00 to	67.00
Elec. furnace, 3 ft. & under	69.00 to	70.00
Structural and plate, 2 ft.	90.00 to	91.00
Structural and plate, 4 ft.	85.00 to	86.00
No. 1 RR hvy. melting	85.00 to	86.00
Scrap rails, random lgh	77.00 to	78.00
Rails, 2 ft. and under	91.00 to	92.00
Angle and splice bars	84.00 to	85.00
No. 1 cupola cast	84.00 to	85.00
Unstripped motor blocks	74.00 to	75.00

Cincinnati

Brokers buying prices per gross ton on cars:		
No. 1 hvy. melting	\$ 54.00 to	\$ 55.00
No. 2 hvy. melting	53.00 to	54.00
No. 1 dealer bundles	64.00 to	65.00
No. 2 bundles	34.00 to	35.00
Machine shop turnings	7.00 to	8.00
Shoveling turnings	10.00 to	11.00
Cast iron borings	15.00 to	16.00
Low phos. 18 in. and under	79.00 to	80.00
Rails, random length	59.00 to	60.00
Rails, 2 ft. and under	74.00 to	75.00
No. 1 cupola cast	59.00 to	60.00
Heavy breakable cast	24.00 to	25.00
Drop broken cast	71.00 to	72.00

New York

Brokers buying prices per gross ton on cars:		
No. 1 hvy. melting	\$ 44.00 to	\$ 45.00
No. 2 hvy. melting	35.00 to	36.00
No. 2 dealer bundles	20.00 to	24.00
Mixed borings and turnings	10.00 to	11.00
Machine shop turnings	4.00 to	6.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	35.00 to	36.00
No. 1 machinery cast	79.00 to	80.00
Mixed yard cast	50.00 to	51.00
Heavy breakable cast	10.00 to	12.00
Stainless		
18-8 prepared solids	490.00 to	500.00
18-8 turnings	390.00 to	400.00
430 prepared solids	90.00 to	100.00
410 solids	75.00 to	85.00

Boston

Brokers buying prices per gross ton on cars:		
No. 1 hvy. melting	\$ 51.00 to	\$ 53.00
No. 2 hvy. melting	41.00 to	43.00
No. 1 dealer bundles	53.00 to	55.00
No. 2 bundles	34.00 to	36.00
No. 1 busheling	59.00 to	61.00
Shredder scrap	61.00 to	63.00
Machine shop turnings	12.00 to	14.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	75.00 to	80.00
Mixed cupola cast	46.00 to	48.00
Heavy breakable cast	8.00 to	10.00

San Francisco

No. 1 hvy. melting	\$ 38.00 to	\$ 40.00
No. 2 hvy. melting	32.00 to	34.00
No. 1 dealer bundles	29.00 to	31.00
No. 2 dealer bundles	17.00 to	19.00
Machine shop turnings	8.00 to	9.00
Cast iron borings	8.00 to	9.00
No. 1 cupola cast	80.00 to	82.00

Los Angeles

No. 1 hvy. melting	\$ 38.00 to	\$ 40.00
No. 2 hvy. melting	32.00 to	34.00
No. 1 dealer bundles	29.00 to	31.00
No. 2 dealer bundles	16.00 to	18.00
Machine shop turnings	13.00 to	14.00
Shoveling turnings	10.00 to	11.00
Cast iron borings	8.00 to	9.00
Elec. furnace, 1 ft. and under		
(foundry)	70.00 to	72.00
No. 1 cupola cast	72.00 to	74.00

Seattle

No. 1 hvy. melting	60.00 to	62.00
No. 2 hvy. melting	51.00 to	53.00
No. 2 bundles	35.00 to	37.00
No. 1 cupola cast	89.00 to	90.00
Mixed yard cast	80.00 to	82.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:		
No. 1 hvy. melting	\$ 82.00 to	\$ 83.00
No. 2 hvy. melting, cut 2 ft. and under	72.00 to	73.00
No. 1 dealer bundles	80.00 to	82.00
No. 2 bundles	58.00 to	60.00
Mixed steel scrap	53.00 to	55.00
Bush, new fact. prep'd	83.00 to	85.00
Bush, new fact. unprep'd	64.00 to	66.00
Machine shop turnings	35.00 to	37.00
Short steel turnings	35.00 to	37.00
Mixed borings and turnings	20.00 to	22.00
Cast scrap	89.00 to	91.00

Houston

Brokers buying prices per gross ton on cars:		
No. 1 hvy. melting	\$ 67.00 to	\$ 68.00
No. 2 hvy. melting	54.00 to	55.00
No. 2 bundles	40.00 to	41.00
Machine shop turnings	11.00 to	12.00
Crushed turnings	30.00 to	31.00
Shredder scrap	74.00 to	75.00
Cut structural plate, 2 ft. and under	97.00 to	98.00
Cut structural plate, 5 ft. and under	79.00 to	80.00
Unstripped motor blocks	57.00 to	58.00
Cupola cast	83.00 to	84.00

STEEL PRICES

PRODUCER KEY With Principal Offices

A7 Armco Inc., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A11 Atlantic Wire Co., Branford, Conn.

B1 Baron Drawn Steel Corp., Toledo, Ohio
B3 Bethlehem Steel Corp., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin Steel Co., Harvey, Ill.

C6 CF&I Steel Corp., Pueblo, Colo.
C10 Copperweld Steel Co., Warren, Ohio
C16 Connors Steel Co., Birmingham, Ala.
C20 Calumet Steel Div., Chicago Heights, Ill.

D1 Detroit Strip Div., Cyclops Corp.

E4 Elliot Bros. Steel Co., New Castle, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.

G2 Granite City Steel Div., National Steel Corp., Granite City, Ill.
G3 Great Lakes Steel Div., National Steel Corp., Ecorse, Mich.
G4 Greer Steel Co., Dover, Ohio
G5 Green River Steel Corp., Owensboro, Ky.
G6 Gibraltar Steel Corp., Buffalo, N. Y.
G7 Georgetown Steel Corp., Georgetown, S.C.

H1 Hercules Drawn Steel Corp., Livonia, Mich.

I2 Ingersoll Steel Div., Newcastle, Ind.
I3 Inland Steel Co., Chicago
I4 Interlake Steel Corp., Chicago

J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K2 Keystone Consolidated Industries, Inc.
K3 Kentucky Electric Steel Co., Ashland, Ky.
K5 Kemco Div., Foote Mineral Co., Keokuk, Ia.

L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens, Inc., Coatesville, Pa.

M2 McLouth Steel Products Corp., Detroit
M8 Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.
M11 Midwest Steel Div., National Steel Corp., Portage, Ind.

N1 Northeast Precision Steel Co., Boston

N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N9 Nelsen Steel & Wire Co., Chicago
N10 North Star Steel Co., Saint Paul, Minn.

O2 Oregon Steel Mills, Portland, Ore.

P2 Phoenix Steel Corp., Claymont, Del.
F15 Philadelphia Steel and Wire Corp., Phila.

R3 Republic Steel Corp., Cleveland
R4 Ramco Steel Co., Buffalo, N. Y.
R5 Roblin Steel Corp., North Tonawanda, N. Y.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S10 Seneca Steel Corp., Buffalo, N. Y.

S16 Southern Precision Steel Co., Gulfport, Miss.

T4 Thomas Steel Strip Co., Warren, Ohio
T5 Timken Co., Steel Division, Canton, Ohio
T7 Texas Steel Co., Fort Worth, Tex.
T9 Triumph Electro Corp., Chicago
T10 Tennessee Forging Steel Corp., Harriman, Tenn.
T11 Teledyne Columbia-Summerill, Carnegie, Pa.

U1 United States Steel Corp., Pittsburgh

W3 Weirton Steel Corp., Weirton, W. Va.
W5 Wheeling-Pittsburgh Steel Corp.
W7 Wilson Steel & Wire Co., Chicago
W10 Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh
W14 Whittar Steel Strip Div., Whittar Industries, Ltd., Detroit

STEEL SERVICE CENTER PRICES

Price, Dollars per 100 lb

Prices are based on list prices reported to Iron Age by a number of metal service centers deemed representative by Iron Age and then weighted based in part on the reports received each month. Prices are not intended to reflect the actual transaction prices obtained by any individual metal service center.

Cities*	City Delivery Charge*	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
		Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merch)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta		24.79	30.61	33.60	27.11	24.88	23.22	21.05	28.73	31.43	45.15	59.50	67.56
Baltimore		24.79	28.97	34.02	31.60	30.35	28.49	23.78	33.08	46.54	51.09	59.10	66.46
Birmingham		23.42	27.62	33.60	26.90	23.68	23.33	22.35	29.13	43.72	49.95	60.60	67.74
Boston		31.59	37.08	43.12	42.00	31.23	29.70	25.01	32.57	38.73	40.76	51.57	55.65
Buffalo		28.59	33.52	39.73	34.70	28.37	25.84	21.26	30.07	37.80	38.76	46.48	53.50
Chicago		26.49	32.81	36.03	24.69	21.92	20.59	19.20	24.99	29.30	36.60	44.26	49.91
Cincinnati		27.32	32.94	35.92	25.42	24.66	19.88	18.68	26.34	31.24	37.71	44.52	49.89
Cleveland		26.20	32.71	35.64	28.06	24.19	22.15	19.05	28.25	34.10	37.75	44.76	51.24
Denver		28.91	35.17	34.44	31.85	26.86	24.20	21.49	35.39	44.04	51.11	59.29	64.85
Detroit		27.06	33.16	36.33	24.62	24.66	20.50	19.06	26.32	31.14	37.38	44.57	50.47
Houston		25.45	27.06	30.33	33.87	24.72	24.31	22.05	36.65	42.12	42.29	55.65	62.74
Kansas City		28.25	34.67	36.90	27.32	25.35	21.25	18.40	30.97	36.41	40.14	46.87	51.81
Los Angeles		24.86	29.24	35.08	29.36	26.27	32.05	27.09	34.71	46.00	51.34	59.30	66.40
Memphis		22.36	30.60	31.64	27.36	24.43	24.15	21.65	30.50	33.71	44.50	56.48	64.86
Milwaukee		26.66	32.57	35.82	26.71	24.99	21.28	19.27	25.16	32.23	37.07	43.78	49.90
New York		29.82	36.09	40.14	37.84	30.67	25.04	22.47	33.05	36.74	41.73	46.90	52.12
Philadelphia		25.80	32.64	38.45	38.58	27.96	26.10	22.25	29.00	37.35	42.37	51.95	57.27
Pittsburgh		36.58	38.19	42.78	34.68	33.37	27.78	25.62	27.40	35.31	39.45	46.84	51.06
Portland		26.61	29.47	36.46	31.87	32.56	34.45	27.54	37.58	46.18	51.95	65.57	
San Francisco		24.76	29.74	35.87	29.52	25.69	29.86	27.16	35.30	47.99	51.84	59.35	66.40
Seattle		26.00	28.24	35.47	28.38	21.37	27.40	27.15	35.25	43.61	52.61	65.62	66.15
Spokane		21.04	28.65	28.65	32.74	32.02	33.63	23.45	36.94	39.45	42.47		55.15
St. Louis		26.74	29.84	29.84	27.19	23.57	19.95	19.63	29.16	34.95	38.39	45.11	50.75
St. Paul		26.52	31.58	31.58	31.29	23.67	26.52	19.13	28.60	34.40	37.59	44.36	50.29

Base Quantities: All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—1/8" x 1"; Plate 1/4" x 84"; Shapes—1 Beams 8 x 12.5; Hot-rolled bar—Rounds 3/4-2-15/16; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1-5/8" round; Cold drawn—1" round; Hot-rolled 4140—1-5/8" round; Cold drawn—1" round. Check local supplier for additions or deductions from base.

*Prices at all points include metropolitan delivery charges.

Codes identify Producers listed on p. 94. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available.

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Re-rolling, Midwest	
W5	\$366.00
N4	\$366.00
West	
C6	\$346.00
Carbon Forging, East	
B3(2)	\$473.00
C10, U1	\$473.00
R3	\$453.00
Midwest	
R3, W5	\$453.00
U1	\$473.00
S1, I3	\$473.00
C10	\$473.00
K2	\$473.00
West	
C6	\$420.00
Alloy, East	
R3	\$492.00
B3	\$512.00
U1, C10	\$512.00
Midwest	
W5	\$492.00
U1, I3	\$512.00
C10	\$512.00
R3	\$492.00
S1	\$512.00
West	
C6	\$469.00

Structurals

Carbon, East	
B3	22.90
J3	23.90
Midwest	
C20	22.90
W8	22.90
I3	23.90
T10	23.90
N4	23.90
South	
C16	23.90
T10	22.90
High-Strength, Low Alloy, East	
B3	22.90
J3	23.90
Midwest	
N4	23.90
W8	24.15
I3	23.90
South	
C16	23.90
Wide Flange, Carbon, East	
B3	22.90
U1	22.75
J3	23.90
Midwest	
U1	22.75
N4	23.90
I3	23.90
Wide Flange, High-Strength-Low Alloy, East	
U1	24.30
Midwest	
U1	24.30

Strip

Hot-Rolled, Carbon, Cut II

Edge—all widths, East

U1, B3	23.75
J3	22.05
Midwest	
D1	22.05
I4	22.85
J3, W3	22.05
G2, G3	23.45
N4	22.55
W5, S1	23.75
U1, A7	23.75
I3, B3	23.75
M2	22.05
R3	22.05

South	
R3	22.05
Cold-Rolled, Carbon Max. 25%, East	
E4	29.75
S10	29.60
P15	24.80
B4	36.60
G6	36.175
Midwest	
I4	38.30
W14	32.80
J4	34.05
S1	37.05
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge, All widths, (plus extras)*	
Midwest	
M2, R3	22.05
W3, J3	22.05
G2, G3	23.45
S1	23.75
A7	25.35
South	
R3	22.05
High-Strength, Cold-Rolled, Low Alloy, Mill Edge	
Midwest	
S1	37.05
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	26.10
I4	25.20
Alloy, Cold-Rolled East (plus extras)*	
E4, M8	43.35
B4	49.75
P15	32.10
Midwest	
I4	44.30
S1	44.80

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyer), East

B3	23.75
J3	22.05
U1	23.75
Midwest	
M2, R3, W3	22.05
D1, J3	22.05
G2, G3	23.45
I4	22.45
U1, W5	23.75
S1, B3	23.75
I3, A7	23.75
West	
U1	24.25
South	
R3	22.05
Cold-Rolled, East, Class I	
B3(2)	28.15
J3	26.15
U1	28.15
Midwest	
R3, M2, W3	26.15
G2, G3, M11	27.85
J3	26.15
D1	26.15
U1, W5	28.15
S1, B3	28.15
I3, A7	28.15
West	
U1	28.65
South	
R3	24.65
Galvanized (hot-dipped), East	
B3(2)	30.30
U1	30.30
Midwest	
J3, D1, W3	28.00
R3, Y1	28.00
G2, M11	30.00
U1, W5	30.30
S1	30.30
I3	30.30
A7	30.30
West	
U1	30.80
South	
R3	28.00

Enameling, Midwest

U1, S1	29.65
I3, A7	29.65
J3	27.65
Long-Term, Midwest	
W5, A7, U1	31.65

R3	29.35
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Wire Rod

East	
B3(2)	22.35
Midwest	
N4, K2	22.35
U1	24.10
A7	22.00
West	
C6	21.45
South	
G7	22.35

Tinplate

Electrolytic tinplate	
Single Reduced (70 lb)	
East	per base box
J3	26.29
U1	30.12
Midwest	
U1	30.12
J3	26.29
M11	27.54
W3	26.29
W5	28.99
West	
U1	30.62
South	
U1	30.12
Double Reduced (55 lb)**	
Midwest	
M11	21.95
J3	21.49
U1	24.33
W3	21.49
W5	23.38
West	
U1	24.83
South	
U1	24.33
Black Plate	
Single Reduced (70 lb)*	
East	
B3	24.81
Midwest	
J3, W3	24.01
I3	24.57
W5	25.55
U1	26.55
M11	26.27
West	
U1	26.55
Double Reduced (55 lb)	
East	
B3	20.49
Midwest	
U1	21.32
M11, W5	20.49
W3, J3	18.93
West	
U1	21.32
South	
U1	21.32
*75 lb—base weight extra 6¢	
**50 lb—base weight extra \$1.40	

Bars

Carbon Steel, Hot-Rolled

(Special quality)

East	
R3, K3, R5	25.80
J3	25.80
U1	27.05
C10	27.05
B3	27.05
Midwest	
I4	26.00
U1, I3	27.05
R3, T10	25.80
C20, N4	25.80
K2	25.80
A7	20.25
West	
C6	24.45
South	
A8	20.65
C16	25.80
Cold Finished Carbon, East	
A11	22.15
R3	33.75
T11, S8	31.00
J3(4), L2	31.00
M8, W10	31.00
N1	24.475

R4, B4	33.25
C10	31.00
Midwest	
W10, R3	33.25
J3	31.00
B1	33.45
L2	30.75
N9	31.00
W14	22.20
B5, M9	34.75
West	
R3	37.15
South	
J3	34.00
C16	24.40
J3	31.95
Alloy, Hot-Rolled, East	
R5, K3	27.95
R3, J3	27.95
U1	29.20
B3	29.20
C10	29.20
Midwest	
R3	27.95
I3, C10, U1	29.20
I4	27.35
A7	20.25
West	
C6	26.60
South	
A8	22.00
Alloy, Cold-Drawn, East	
L2	35.20
R3, N1	37.90
R4	37.10
J3, W10, L2	34.85
T11, S8	34.85
C10	34.85
Midwest	
R3	37.35
J3, W10, C10	34.85
B1	37.30
N9	34.85
L2	34.85
B5, M9	38.60
West	
R3	40.75
South	
J3	35.85
C16	28.00

Plates

Carbon Steel, East

B3	23.25
L4, U1	25.75
P2	23.25
J3	26.75
Midwest	
B3	23.25
I3	25.75
J3, A7	22.80
U1, I4, S1	25.75
R3	26.75
West	
U1	25.75
O2	23.00
South	
R3	25.75
U1	25.75
Alloy East	
B3	31.05
U1, L4	33.55
P2	33.55
J3	34.55
Midwest	
B3	31.05
I4, U1	33.55
West	
O2	31.00
South	
U1	33.55

Wire

Carbon Steel Wire, East

B3	27.10
A11	22.15
Midwest	
R3	24.60
N4, W7	27.40
K2	24.20
South	
A8	22.85
West	
C6	24.95

UNEVEN ORDERS GAINS STILL TRIGGER HOPES

The rise in durable goods orders in August was a solid one. Orders were up 2.6 pct from the previous month.

Still, the orders rise wasn't as clear a sign of health as might be noted at first glance. The orders gain was too lop-sided.

Total new orders for durable goods increased by \$2.7 billion to \$107 billion during the month. But orders received by a single industry group, transportation equipment, rose by \$2.8 billion in August. This strong 10.6 pct rise was accounted for by big gains in motor vehicles and aerospace products.

In other words, sales incentives in the auto industry and contracts for military aircraft almost singularly gave the big upward push to orders in August. Beyond these industry categories, orders showed slight gains and moderate declines.

Orders received by the primary metals industry were up 2.6 pct in August. All of this gain was accounted for by the steel industry. Orders for nonferrous metals lagged during the month.

Orders for electrical machinery were soft in August. Incoming orders in this industry group were down about 3 pct.

One point came through clearly in the U.S. Commerce Department announcement on orders, shipments and inventories: Durable goods producers are still sitting tight on their inventories.

Inventories declined fractionally during the month in the face of rises of 2.6 pct in both orders and shipments. The tight hold on stocks covered both work in process and finished goods.

Perhaps, the most hopeful sign in the August report was a 3.6 pct rise in orders for nondefense capital goods. This was especially good news because orders for these goods had tumbled in July.

Billions of Dollars, Seasonally adjusted Monthly Total, unless otherwise noted Source: U.S. Dept of Commerce		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
CAPITAL EXPENDITURES (Annual Rates)				
U.S. Industry, Total	4th Qtr*	\$395.3	\$392.6	\$367.2
Manufacturing, Total	4th Qtr*	161.9	160.8	146.2
Manufacturing, Durable Goods	4th Qtr*	77.5	77.8	71.1
Mining Industry	4th Qtr*	15.9	16.2	16.9
KEY INDICATORS, Durable Goods Manufacturing				
New Orders	Aug.	107.0	104.4	101.9
Shipments	Aug.	105.2	102.5	100.3
Inventories	Aug.	191.8	192.2	187.0
Unfilled Orders	Aug.	352.9	351.1	350.3
NEW ORDERS, METALWORKING				
Capital Goods Producers, Nondefense Industries	Aug.	27.6	26.7	24.7
Capital Goods Producers Defense Industries	Aug.	10.0	9.6	8.1
Primary Metals, Total	Aug.	10.9	10.6	10.8
Steel (SIC 331)	Aug.	4.9	4.5	4.4
Iron & Steel Castings (SIC 332)	Aug.	1.3	1.2	1.3
Nonferrous Metals	Aug.	4.7	4.9	5.1
Nonelectrical Mach.-Equip. Industries, Total	Aug.	17.9	17.8	17.7
Engines & Turbines	Aug.	1.3	1.3	1.2
Farm Machinery & Equipment (Shipments)	Aug.	0.9	0.8	0.8
Construction, Mining & Mat. Hdlg. Equip	Aug.	2.9	3.0	2.6
General Industrial Machinery	Aug.	1.3	1.3	1.5
Fluid Power Equipment** (Index-1972=100)	Aug.	256.0	253.0	281.0
Metalworking Machinery	Aug.	0.8	1.0	0.9
Machine Tools, Total (\$Mill., Unadjusted)***	Aug.	183.9	199.9	200.6
Machine Tools, Metalcutting***	Aug.	130.2	149.9	135.0
Machine Tools, Metalforming***	Aug.	53.7	50.0	65.6
Electrical Mach. & Equip. Industries, Total	Aug.	14.7	15.2	16.2
Elec. Transmission Equip. & Ind. Apparatus	Aug.	2.2	2.1	2.1
Household Appliances	Aug.	1.3	1.4	1.4
Communication Equipment	Aug.	5.2	5.0	6.1
Transportation Equipment, Total	Aug.	29.6	26.7	25.5
Motor Vehicles & Parts (Shipments)	Aug.	17.1	15.8	16.9
Aircraft, Missiles & Parts	Aug.	11.0	9.3	7.6
Shipbuilding & Military Tanks	Aug.	0.4	1.1	0.6
Fabricated Metal Products, Total	Aug.	14.7	14.2	11.9
Instruments, Total	Aug.	4.6	5.0	4.6

*Est.—Commerce Dept.; **Source: National Fluid Power Assn.; ***Source: NMTBA.